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PFEIFFER'S UNFIGURED SPECIES OF *STROPHOCHEILUS* (*MEGALOBULIMUS*)

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This paper is a supplement to J. C. Bequaert's "Monograph of the Strophocheilidae, a Neotropical Family of Terrestrial Mollusks" (Bull. Mus. Comp. Zool., Harvard, **100**: 1-210, 1948).

When Dr. J. C. Bequaert published his monograph on the Strophocheilidae he was unable to deal in detail with two species described by Pfeiffer from specimens in the Cuming collection, now in the British Museum (Natural History), London. Neither of these had ever been figured, and the types are so far the only specimens known. Opportunity has, therefore, been taken to complete Dr. Bequaert's monumental work with figures of Pfeiffer's almost unknown species. In addition we are describing and figuring *S. (M.) capillaceus* (Pfeiffer), so far unfigured, and *S. indigens* Fulton.

The authors wish to express their grateful thanks to the British Museum authorities for permission to examine and photograph the types for reproduction herein, to Dr. R. Zischka for specimens of *S. (M.) indigens* Fulton, to Drs. W. Blume and W. Weyrauch for the loan of material, and to Mr. S. P. Dance and Mr. J. A. Willson for their generous assistance in photographing specimens.

STROPHOCHEILUS (*MEGALOBULIMUS*) HECTOR (Pfeiffer)

Plate 1, Figure 1

Bulimus hector Pfeiffer 1857, Malak. Blätt., **4**, p. 157 (Brazil); 1859, Monogr. Helic. Viv., **4**, p. 367; 1868, *Op. cit.*, **6**, p. 11; 1876, *Op. cit.*, **8**, p. 15; 1877, *Op. cit.*, **8**, p. 604. Paetel, 1889, Cat. Conch. Samml., 4th ed., **2**, p. 212.

Bulimus (Borus) hector von Martens 1860, in Albers, Die Heliceen, 2nd

ed., p. 192; 1876, Novit. Conchol., Abt. 1, 5, pts. 50-51, p. 21. Pfeiffer, 1879, Nomencl. Helic. Vic., p. 224.

Strophocheilus (*Thaumastus*) *hector* Pilsbry 1895, Man. of Conch., (2) 10, p. 50.

Thaumastus hector Pilsbry 1902, Man. of Conch., (2) 14, Classification, p. xxi.

Strophocheilus (? *Megalobulimus*) *hector* Pfeiffer, Bequaert 1948, Bull. Mus. Comp. Zool., Harvard, 100: 118.

Original description: "T. subimperfectorata, elongato-ovata, solidula, sub epidermide decidua, fulvida alba; spira conica, apice rotundata; anfr. 6 convexiusculi, summi conferte capillaceo striati, ultimus spiram vix superans, plicato-striatus et obsolete decussatus; columella leviter arcuata, non plicata; apertura subverticalis, acuminato-ovalis, intus albida, nitida; perist. album, marginibus callo albo junctis, dextro subincrassato, brevissime expanso, columellari superne dilatato, adnato. — Long. 71, diam. 35 mill., Ap. 36 mill. longa, 19½ lata."

New Measurements of Adult Holotype

Length	Greatest Width	Aperture Length	Aperture Width	
71 mm.	39 mm.	35 mm.	26 mm.	6 whorls

Specimen examined: Brazil (Miers Coll.), holotype (Brit. Mus., Nat. Hist.).

Remarks. Bequaert (1948, p. 118), who had seen no specimens, was inclined to exclude *hector* from the *Strophocheilidae*, and Pilsbry (1895, p. 50) placed it in *Thaumastus*. Von Martens (1876), however, suggested that it might be related to *Strophocheilus* (*M.*) *oblongus* (Müller).

Careful examination of the type has convinced us that it is indeed correctly referred to the *Strophocheilidae*, being by reason of its nepionic sculpture a member of the subgenus *Megalobulimus*. It does not appear, however, to be in any way related to *S. (M.) oblongus*, the shell being longer and narrower in proportion, much paler and with a white lip. It is furthermore much thinner, the apical sculpture finer, and is covered with a brown periostracum.

S. (M.) hector would appear to us to be quite distinct from any other species of *Megalobulimus* so far known.

STROPHOCHEILUS (MEGALOBULIMUS) COCAPATENSIS (Pfeiffer)

Plate 1, figure 2

- Bulimus cocapatensis* Pfeiffer 1855 (August), Proc. Zool. Soc. London, (for 1855), p. 115 (Cocapata, Bolivia); 1859, Monogr. Helic. Viv., **4**, p. 367; 1868, *Op. cit.*, **6**, p. 11; 1876, *Op. cit.*, **8**, p. 15. Paetel, 1889, Cat. Conch. Samml., 4th ed., **2**, p. 209.
- Bulimus (Borus) cocapatensis* Pfeiffer 1856 (January), Malak. Blätt., **2**, (for 1855), p. 147. Von Marteus, 1860, in Albers, Die Heliceen, 2nd ed., p. 192; 1876, Novit. Conchol., Abt. 1, **5**, pts. 50-51, p. 9. Pfeiffer, 1879, Nomencl. Helic. Viv., p. 224.
- Strophocheilus (Borus) cocapatensis* Pfeiffer, Pilsbry 1895, Man. of Conch., (2) **10**, p. 20.
- Strophocheilus (Borus) cocapatensis* Pfeiffer, Pilsbry 1895, Man. of Conch., (2) **10**, p. 12; 1902, *Op. cit.*, (2) **14**, Classification, p. v. Misspelling of *cocapatensis*.
- Bulimus corapatensis* Pfeiffer, Paetel 1889, Cat. Conch. Samml., 4th ed., **2**, p. 10. Misspelling of *cocapatensis*.
- Strophocheilus cocapatensis* Pfeiffer, Pilsbry 1930, Proc. Ac. Nat. Sci. Philadelphia, **82**, p. 355. Misspelling of *cocapatensis*.
- Strophocheilus (Megalobulimus) cocapatensis* Pfeiffer, Bequaert 1948, Bull. Mus. Comp. Zool., Harvard, **100**, no. 1, p. 126.

Original description: “*B. testa* imperforata, ovato-oblonga, solida, minutissime decussata, sub epidermide virenti-fulvida violaceo-carnea; spira convexo-conica, apice obtusa; sutura al-bida, irregulari; anfr. $5\frac{1}{2}$ superis radiatim costatis et minutis-sime granulatis, sequentibus peroblique descendentes, parum convexis, ultimo spiram sub-aequante, basi rotundato; columella recedente, leviter arcuata; apertura subverticali acuminato-ovali, intus margaritacea; perist. incrassato, breviter expanso, marginibus callo nitido junctis, columellari dilatato, adnato. Long. 67, diam. 30 mill.”

MEASUREMENTS OF ADULT SHELLS

	Greatest	Aperture	Aperture		
Length	Width	Length	Width		
67 mm.	33 mm.	31 mm.	21 mm.	$5\frac{1}{2}$ whorls.	Holotype
67	33	31	20	$5\frac{1}{2}$ whorls.	Paratype
66	33	32	20	$5\frac{1}{2}$ whorls.	Paratype

Specimens examined: Cocapata, Bolivia (Bridges Coll.), 3 types from the Cuning Collection (Brit. Mus. [Nat. Hist.]).

Remarks. As pointed out by Bequaert (1948, p. 127), the radially ribbed and minutely granulated nepionic whorls, mentioned in Pfeiffer's original description, are characteristic

of *Megalobulimus*, to which subgenus *S. cocapatensis* undoubtedly belongs. Pilsbry (1930, Proc. Ac. Nat. Sci. Philadelphia, **82**, p. 355), in describing his *S. carrikeri*, infers that it may be related to *S. cocapatensis*, but we are unable to see any justification for this assumption. Bequaert suggests that it is not impossible that *cocapatensis* may be the same as *S. intertextus* Pilsbry, but comparison of a specimen of the latter with Pfeiffer's type has convinced us that they are in no way related.

The shell of *cocapatensis* is imperforate, long, thin and delicate, brown in color, with a very streaky, pink-flushed appearance. The spire is attenuated, the apex pointed, the mouth long and narrow, the aperture brown within, and the outer lip thin, white, slightly reflected. Columella and callus white.

Pfeiffer compared *cocapatensis* with *S. rosaceus*, but, as pointed out by Bequaert, the nepionic sculpture is typical of *Megalobulimus* and is not found in *Chiliborus*, to which subgenus *S. rosaceus* belongs. Pfeiffer later (1856) placed it between "*S. matthewsi*" (= *leucostoma*) and *S. capillaceus* but, as he does not show it as being then in his collection, this opinion would seem of little value.

STROPHOCHEILUS (MEGALOBULIMUS) CAPILLACEUS (Pfeiffer)

Plate 1, figure 3

Bulimus capillaceus Pfeiffer 1855 (July), Proc. Zool. Soc. London, (for 1855), p. 93.

Strophocheilus (*Borus*) *capillaceus* Pfeiffer, Pilsbry 1895, Man. of Conch., (2) **10**, p. 31, Pl. 14, fig. 69.

Strophocheilus (*Megalobulimus*) *capillaceus* Pfeiffer, Bequaert 1948, Bull. Mus. Comp. Zool., Harvard, **100**, p. 120 (full synonymy), Pl. 14, fig. 5.

The type of *S. (M.) capillaceus* is in the British Museum (Nat. Hist.), from the Cuming Collection. It consists of three syntypes, of which that figured herein is now chosen as lectotype, no holotype having been selected by Pfeiffer.

MEASUREMENTS OF ADULT SHELLS

Length	Greatest Width	Aperture Length	Aperture Width	
64 mm.	38 mm.	37 mm.	24 mm.	5 whorls. Lectotype
60	39	35	30	5 whorls. Syntype
53	33	23	19	5 whorls. Syntype
67	40.5	40.5	22	5½ whorls. Huanaco
69	42	41	21.5	5½ whorls. Santa Ana

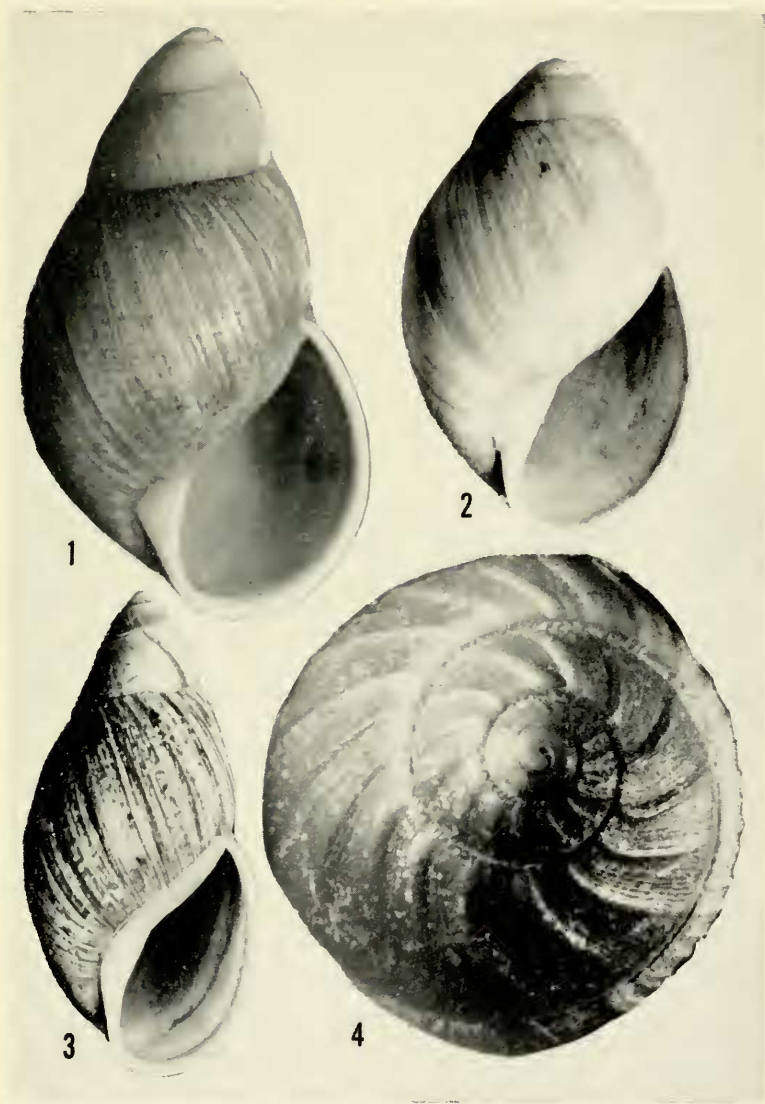


Plate 1

Fig. 1. *Strophocheilus* (*Megalobulimus*) *hector* (Pfeiffer). Holotype, nat. size. Fig. 2. *Strophocheilus* (*Megalobulimus*) *cocapatensis* (Pfeiffer). Holotype, nat. size. Fig. 3. *Strophocheilus* (*Megalobulimus*) *capillaceus* (Pfeiffer). Lectotype, nat. size. Fig. 4. *Strophocheilus* (*Megalobulimus*) *maximus indigens* Fulton. Apical aspect of immature shell, much enlarged.

Specimens examined: "Banks of the River Solimões," Peru (Cuming Collection). Near Santa Ana, Rio Urubamba, Peru, 3500 ft. (W. Weyrauch Coll., in Pain Collection). Huanaco, Peru (Pain Collection).

Remarks. Bequaert (1948, p. 120) has dealt at length with the probable relationships and position in the subgenus of *S. capillaceus*, and gave an excellent figure of it, together with a complete synonymy. To this very full account there is nothing which we can profitably add.

STROPHOCHEILUS (MEGALOBULIMUS) MAXIMUS INDIGENS Fulton

Plate 1, figure 4; Plate 2, figures 5, 6

Bulimus kremnoicus d'Orbigny 1837, Voyage Amér. Méridion., 5, pt. 3, Moll., p. 300 (in part only: some specimens from Yuracare, Bolivia, the locality given in Explanation of Plates, p. 695, for fig. 3), Pl. 35, fig. 3 only. Not *Helix kremnoica* d'Orbigny 1835.

Strophocheilus (Borus) maximus ? var. *kremnoicus* d'Orbigny, Pilsbry 1895, Man. of Conch., (2) 10, p. 16, Pl. 5, fig. 28 (copy of d'Orbigny's fig. 3); 1902, *Op. cit.*, (2) 14, Classification, p. iv.

Strophocheilus (Borus) indigens Fulton 1914, Proc. Mal. Soc. London, 11, pt. 3, p. 165, fig. (Peru).

Strophocheilus (Megalobulimus) indigens Fulton, Bequaert 1948, Bull. Mus. Comp. Zool., 100, No. 1, p. 98, Pl. 24, fig. 1 (copy of Fulton's 1914 fig.).

Strophocheilus indigens Fulton, Blume 1952, Arch. f. Mollusk., Frankfurt, 81, pts. 4-6, p. 105.

Strophocheilus (Borus) kremnoicus subsp. *vestitus* Pilsbry 1926, Proc. Ac. Nat. Sci. Philadelphia, 78, p. 6 (Bolivia, probably in Dept. Cochabamba), Pl. 2, fig. 7.

Strophocheilus (Megalobulimus) maximus vestitus Pilsbry, Bequaert 1948, Bull. Mus. Comp. Zool., Harvard, 100: 94, Pl. 19, fig. 4.

Original description: "Shell ovate-oblong, yellowish brown, moderately solid; spire about 13 mm. longer than the aperture; whorls $6\frac{1}{2}$, apex smooth, the second and third whorls with prominent oblique plications, last two volutions polished and apparently smooth, but under the lens are seen to be finely granulated, the granulations being strong on the middle whorls and gradually becoming weaker towards the aperture; the lower whorls have also some irregular and almost obsolete plications; aperture sub-oval, whitish within; peristome thickened and very slightly expanded, white, margins joined by a moderately thickened white callus. Alt. 110, Diam. Maj. 47 mm. The nearest species to this is *S. (Borus) huascari* Tschudi, which is broader, has a wider aperture, a rougher and duller surface, and its apical plications are much finer and closer together than in *indigens*."

MEASUREMENTS OF ADULT SHELLS

Length	Greatest Width	Aperture Length	Aperture Width	Whorls	
135 mm.	57.5 mm.	60 mm.	41 mm.	7	Bolivia: Sacha, Yungas, 800-1500 m. (Bavarian State Mus.)
132	63	59.5	37	7	“ “
127	58	56	39	7	“ “
128	58	55	31.5	6½	Bolivia (W. Weyrauch Collection)
118.5	61	57.5	40.5	6	Bolivia: Chapare, 400 m. (Bavarian State Mus.)
118	58	56	24	—	Type of <i>vestitus</i> Pilsbry
116	48	47	31	6½	Holotype of <i>indigens</i> , Peru
101	46	47	26	5½	Bolivia (T. Pain Collection)
100	49	48	27.5	5½	Bolivia (W. Weyrauch Collection)

Specimens examined: Peru, type of *indigens* Fulton (British Museum [Nat. Hist.], No. 1915-1-5-199). Yungas de Palmar, 1200 m., Bolivia (R. Zischka Coll., in W. Blume, T. Pain, and W. Weyrauch Collections).

Remarks. Comparison of the type of *indigens*, together with the shells from Bolivia, with Bequaert's (1948) figure of *vestitus* Pilsbry, leave us in no doubt that they are identical. All show the strong, prominent oblique plications on the second and third whorls, noticeably absent on both the typical *maximus* and the subspecies *huascari*. As pointed out by Bequaert (1948, p. 94), *indigens* (= *vestitus*) is of considerable interest in that it bridges the gap between typical *maximus* and subspecies *huascari* in respect of its relatively wider spire, narrower body-whorl and smaller mouth.

Fulton, who described *indigens* from a unique holotype, did not apparently connect it with *maximus*, although he drew attention to its close resemblance to *huascari*.

Bequaert (1948, p. 94), dealing with *vestitus*, makes no mention of the prominent sculpture, although this is easily recognized in his excellent photograph of the shell he selected as holotype from Pilsbry's type set (Ac. Nat. Sci. Philadelphia No. 138105). Dr. Weyrauch informs us (*in litt.*, 1958) that he considers the elongated shell from Oxapampa, Peru, referred by Bequaert to *vestitus*, to be a typical *maximus* on account of the aperture being much longer than in *indigens* (= *vestitus*). A similar elongated shell from Peru, without more definite locality,

kindly sent by Dr. Weyrauch, shows traces of a dark periostracum and, although much worn about the spire, has the long aperture characteristic of typical *maximus*.

S. (M.) maximus indigenus Fulton has not so far been obtained in Peru by Dr. Weyrauch, but, from the similarity of the fauna of southeastern Peru and northeastern Bolivia, there can be little doubt that *indigenus* occurs also in Peru.

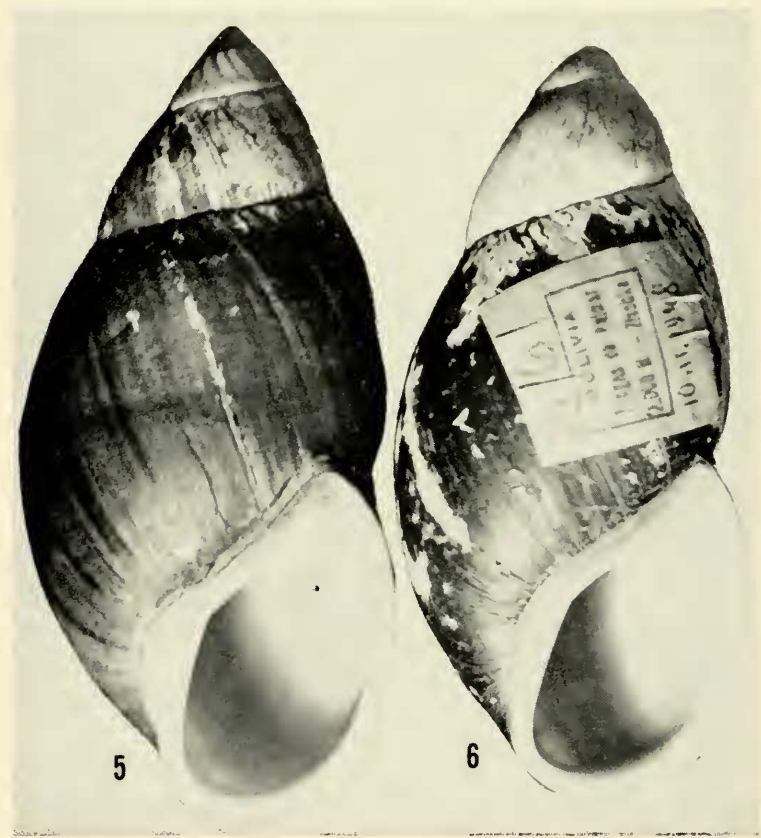


Plate 2

Fig. 5. *Strophocheilus (Megalobulimus) maximus indigenus* Fulton. Holotype, nat. size. Fig. 6. *Strophocheilus (Megalobulimus) maximus indigenus* Fulton. Yungas de Palmar, Bolivia, nat. size.